OUR BOOK SHELF.

Soils: their Nature and Management. By Primrose McConnell. Pp. xii+104. (London: Cassell and Co., Ltd., 1908.) Price 1s. net.

IN this little book the working farmer or gardener will find set out clearly and from his own point of view just that basis of the scientific knowledge of the soil that he ought to possess for the intelligent management of his land. The author, Mr. Primrose McConnell, is well known as a practical farmer, who has been trained in science and has shown a special interest in the application of scientific principles to the implements used for cultivating the land.

Mr. McConnell begins with an account of the origin of soils, their composition, classification, and distribution on the different formations of Great Britain, in which he gives some indication of where good and bad soils occur, and of their characteristic trees and weeds. The more valuable part of the book is, however, that which deals with soil physics and the effect of cultivation and management upon the all-important factor of the texture of the soil. The author is, as might be expected from a man accustomed to tillage operations, free from the temptation to regard the soil purely from the chemical point of view as a medium for the supply of the plant with certain salts; again and again he lays stress on the importance of tilth and the way it can be affected by the operations, both manurial and mechanical, of the farmer. In this direction it is very desirable that more experimental work should be done; the basis of the statements usually made as to the effect of various acts of husbandry upon the water content and temperature of the soil is astonishingly slight. For example, we should doubt a statement on p. 97 that rolled soil 1½ inches below the surface may be 10° F. warmer than the same soil not rolled, as also the explanation which follows—but the experimental evidence we could bring against it is not so strong as the importance of the question would warrant.

Here and there throughout the book there are small mistakes and misreadings in dealing with scientific matters, but they are of small account, and do not touch the general course of the argument, so that we can cordially recommend the book to the class of readers for whom it was designed.

The Life and Work of George William Stow, South African Geologist and Ethnologist. By R. B. Young. Pp. vii+123. (London: Longmans, Green and Co., 1908.) Price 3s. 6d.

SOUTH African geology has yielded many results of world-wide interest, including the extinct fauna of the Karroo and the Palæozoic glaciation of South Africa. The debt due to George William Stow, the pioneer in the discovery of both subjects, will now be paid more easily owing to the admirable sketch of his career by Prof. R. B. Young. Geologists would, however, have been still more grateful for this biography if it had included a table of contents, an index, and a bibliography.

Stow was born at Nuneaton in 1822, and educated at a school on the Isle of Dogs. Though anxious to be an engineer, he was trained for medicine; but he did not qualify for practice, emigrated to South Africa in 1843, and lived there until his death in 1882. Considering the time and place in which his life was spent, it was apparently not rich in striking incidents or adventures. It was, however, during a trek to dodge the rebellious Kafirs in 1850 that he found in the Rhenosterbergen the first of the extinct reptiles of the Karroo. He fortunately reported his discovery to Prof. Rupert Jones, to whose help and encouragement Stow's services to geology are largely due. Stow's life was unsettled; he was thrice married, and in the search for a livelihood he was at different times teacher in the schools of the Colonial Church, bookkeeper, trader at Queenstown, wine merchant at Kimberley, diamond merchant, geologist to the Orange Free State, and manager of the South African Free State Coal and Mineral Mining Association. His main scientific achievements were his discovery of the fossil reptiles of the Karroo, his recognition and proof of the glacial origin of the Dwyka conglomerate, his collection of Bushman drawings, his valuable memoir on the geology of Griqualand West, published by the Geological Society, and his two reports on the geology of parts of the Orange Free State, in which he described the geology of the area on the southern border of the Rand basin and part of the Vereeniging coalfield. Unfortunately, Stow's detailed account of the geology of Griqualand was never published, and the manuscript is now in the library of the Geological Society of South Africa.

Stow claimed the discovery of a second Cainozoic glaciation of South Africa, and in his glacial enthusiasm he described the diamond pipes of Kimberley as due to the action of ice. His view of a late Cainozoic glacial action in South Africa was at one time accepted in Europe, but is now discredited. His discovery, however, of the Upper Palæozoic glaciation has been confirmed, and will always give Stow's name an honoured place in the list of South African geologists. J. W. G.

Lessons in Hygienic Physiology. By W. M. Coleman. Pp. ix+270. (New York: The Macmillan Company; London: Macmillan and Co., Ltd., 1907.) Price 3s.

OF the many school physiologies, this is one of the best written, best arranged, and best proportioned. Since Huxley set the fashion more than a generation ago, the range of school physiology has remained pretty much the same; but there have been improvements in method. The method of this book is specifically adapted to the needs of teacher and pupil. All through, there are suggestions for making the teaching concrete, for "founding the study on facts and not mere words" (preface to the teacher). The illustrations are very varied, and set forth with many small original touches. The "review" and "thought questions" are obviously the careful work of an experienced teacher. Principles are never lost sight of, and the exposition never becomes mechanical or irrelevant, as so often happens when written examinations are the objective. But the book is admirably suited even for examinations. Taught as it may and should be taught, this little book should yield excellent results. Food and stimulants are specially discussed. The volume is one of a graded series.

L'Aérobisation des Microbes Anaérobies. By Georges Rosenthal. Pp. 107. (Paris: Félix Alcan, 1908.)

Anleitung zur Kultur der Mikroorganismen. By Dr. Ernst Küster. Pp. v+201. (Leipzig: B. G. Teubner, 1907.) Price 7 marks.

IN his interesting essay, Mr. Rosenthal first describes the methods by which anaërobic microbes may be isolated and cultivated, then methods for measuring the degree of anaërobiosis, either by a pressure gauge fitted to an exhausted chamber or by the degree of growth occurring from above downwards in a tube containing a deep layer of culture medium, and, finally, the technique whereby different anaërobic organisms may ultimately be transformed into aërobic ones. This, according to the author, may be accomplished by simultaneously gradually admitting air

and subculturing, so that a gradual acclimatisation to an aërobic condition is brought about; other methods are also described. The author then relates his experiences with such anaërobic organisms as the *Bacillus perfringens*, the bacillus of malignant œdema, and the bacillus of tetanus, and concludes with a critical examination of his results in order to detect fallacies.

Dr. Küster's little book will be very useful in the laboratory, as it gives a fairly complete summary, with bibliography, of the methods of isolation and cultivation of micro-organisms, including protozoa, myxomycetes, algæ, fungi, and bacteria, together with the formulæ and mode of preparation of the nutrient media. A book covering so wide a field will naturally be unequal, and the best sections are probably those dealing with the algæ, fungi, and special groups of bacteria. R. T. HEWLETT.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. *No notice is taken of anonymous communications.]*

Distant Electric Vision.

REFERRING to Mr. Shelford Bidwell's illuminating communication on this subject published in NATURE of June 4, may I point out that though, as stated by Mr. Bidwell, it is wildly impracticable to effect even 160,000 synchronised operations per second by ordinary mechanical means, this part of the problem of obtaining distant electric vision can probably be solved by the employment of two beams of kathode rays (one at the transmitting and one at the receiving station) synchronously deflected by the varying fields of two electromagnets placed at right angles to one another and energised by two alternating electric currents of widely different frequencies, so that the moving extremities of the two beams are caused to sweep synchronously over the whole of the required surfaces within the one-tenth of a second necessary to take advantage of visual persistence.

Indeed, so far as the receiving apparatus is concerned, the moving kathode beam has only to be arranged to impinge on a sufficiently sensitive fluorescent screen, and given suitable variations in its intensity, to obtain the desired result.

The real difficulties lie in devising an efficient transmitter which, under the influence of light and shade, shall sufficiently vary the transmitted electric current so as to produce the necessary alterations in the intensity of the kathode beam of the receiver, and further in making this transmitter sufficiently rapid in its action to respond to the 160,000 variations per second that are necessary as a minimum.

Possibly no photoelectric phenomenon at present known will provide what is required in this respect, but should something suitable be discovered, distant electric vision will, I think, come within the region of possibility.

A. A. CAMPBELL SWINTON.

66 Victoria Street, London, S.W., June 12.

Prominences and Coronal Structure.

PRESSURE of work in other directions prevented me from writing these lines before to-day. They have reference to an article contained in NATURE for April 2, in which Dr. Lockyer describes what he considers a triple concentric arc formation in the upper chromosphere similar to coronal structures observed during the eclipses of 1898, 1901, and 1905. Through the kindness of Prof. Hale, the British Astronomical Association is in possession of a photographic slide showing a composite calcium spectroheliogram taken of the sun's disc and chromosphere on July 17, 1907, *i.e.* the same date as the South Kensington one. Prof. Hale took the picture at 6.46 a.m. P.S.T., while Dr. Lockyer took his at South Kensington at 3.14 p.m. G.M.T. There is thus a difference of something like half an hour between the two exposures, that at Mount Wilson being the earlier one. Comparing the two spectroheliograms, it becomes evident that what Dr. Lockyer considers concentric coronal arcs, due to eruptive action either immediately in front or in the rear of the formation, constitute in reality the débris of an eruptive prominence. I happened to be observing the sun at the time, starting about 1.30 p.m. L.T., having also had the sun under observation early in the morning, and an extract of my notes reads thus:—

"July 17, 1907, 7 a.m.—In S.L.E. there is something hatching, the limb looking very uneven and the chromospheric lines contorted, with strong D_3 absorption effects being on view there from time to time.

"Ditto, 1.30 to 2.20 p.m.—Fine eruptive prominence in L.S.E., where something was preparing this morning. Great displacement of $H\alpha$ to red side, and the prominence seems to rush *en bloc* away from the observer and in an almost horizontal direction towards the south, rising radially but little, and dissolving from a stout, dense, and bright stem into a number of bright, more or less parallel layers or striæ."

Great activity continued in the S.E. quadrant for the next three days. The Mount Wilson picture shows what I observed in the spectroscope, viz. a strong dense stem breaking forth in lower L.S.E., curving immediately over to the south (as can be gathered from the great displacement observed, the real direction must have been *south-east*), the stem dissolving into a complicated structure of branches a good distance away to the south of the point of origin.

I had to leave the instrument at 2.20 p.m., when a few minutes later Prof. Hale in far-away California exposed his plate, to be followed soon after by Dr. Lockyer in South Kensington. It is quite feasible to think that when the exposure was made at South Kensington, the fragments, already in parallel arrangement when I left the instrument, partook also of some kind of concentric curvature, which is, indeed, indicated on Prof. Hale's spectroheliogram. As Dr. Lockyer mentions the absence of an *underlying* prominence to the concentric arcs he discerns in his picture, I deemed it in order to mention the above facts. I have not the slightest intention by so doing to doubt the great likelihood that concentric coronal arcs, such as those observed, for instance, by Mr. Wesley, are due to eruptive action from underneath, but in the case at present under consideration this seems not to have been the case in this more limited sense. I feel sure that Dr. Lockyer will come to the same conclusion when he compares the two spectroheliograms in the light of my observational notes given above.

ALBERT ALFRED BUSS.

2 Lansdowne Terrace, Grosvenor Square, Ashton-on-Mersey, near Manchester, May 28.

The Action of Radium Salts on Glass.

THE letter of Mr. Phillip in NATURE of April 9 led me to examine some tubes containing radium salt which have been in my possession for some years. Some had become very purple owing to the action of the radium, whilst others were not coloured at all. The amount of coloration did not seem to depend upon the activity of the preparation; in fact, the deepest coloration—with one exception—was that due to a salt supposed to contain only one-thousandth of its weight of radium salt.

Certain kinds of glass when exposed to the bright sunshine of South Africa take a coloration similar to that produced by radium salt; I therefore thought that it might be interesting to observe the effect of sunlight upon a specimen of glass coloured by radium. With this object I exposed one of the coloured tubes to the action of the sunlight, and after twelve days' exposure the colour has been almost removed.

I have one tube which contained radium salt of about one million units activity; where the salt had rested against the tube almost black spots have developed. I shall expose this tube to the continued action of sunlight.

W. A. DOUGLAS RUDGE.

University College, Bloemfontein, O.R.C., May 14.